Notice of Allowability	Application No.	Applicant(s)	
	10/725,738	RAI ET AL.	
	Examiner	Art Unit	
	Brian J. Gillis	2441	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the Examiner's Amendment attached and the interview on October 21, 2009*.

2. ☒ The allowed claim(s) is/are *1,3,7-18,21-28,30-47,53 and 55-75*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *11032009* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Larry Donaghue/
Primary Examiner, Art Unit 2454

DETAILED ACTION

This action is responsive to the Amendment after Non-Final filed August 14, 2009 and the interview on October 21, 2009. Claims 1, 3, 7-18, 21-28, 30-47, 53, and 55-75 were pending. *Claims 1, 3, 7-18, 21-28, 30-47, 53, and 55-75 are allowed.*

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Bernard Tomsa on October 21, 2009.

The application has been amended as follows:

In the Claims

1. (Currently Amended) A computer readable storage medium storing one or more routines executable by a computer processor running on at least one collection computer, the routines comprising:

one or more load balancing routines that collect proportional server capability information for a plurality of servers, wherein the proportional server capability information is based at least in part on processing of sample requests transmitted to the plurality of servers during intervals;

wherein the one or more load balancing routines encode the collected proportional server capability information in a weighted distribution that represents the

plurality of servers in a weighted manner based at least in part on the proportional server capability information, the weighted manner reflecting a percentage of total server capability realized by each server, wherein the encoded load balancing is stored in a persistent or non-persistent memory of the collection computer, wherein the encoding is one of either a linked list, a binary search tree, a hash table or an array, and wherein a proportion of entries, for each server, in the linked list, binary search tree, hash table or array correspond to the proportional server capability of each server; and

wherein the one or more routines further randomly select servers to process client requests from the weighted distribution.

9. (Currently Amended) The computer readable storage medium of claim 1 wherein the server capability information includes one or more of ~~proportion~~ a percentage of serviced sample requests, time to serve each sample request, time to serve total sample requests, ~~proportion~~a percentage of sample request types serviced, and time to serve sample request types.

14. (Currently Amended) A method comprising:

during intervals, collecting data that reflects ~~proportional~~ capabilities of a plurality of backend servers at a collection computer, wherein the backend server capability data is based at least in part on servicing of sample requests by the plurality of backend servers;

encoding the collected backend server capability data to reflect ~~proportional~~ backend server capability of each of the plurality of backend servers, each server's percentage of the total processing capability being reflected, wherein the

encoding is one of either a linked list, a binary search tree, a hash table or an array, and wherein a proportion of entries, for each server, in the linked list, binary search tree, hash table or array correspond to the proportional server capability of each server; and

storing the encoded collected backend server capability data in at least one of a persistent or non-persistent memory included with the collection computer.

15. (Currently Amended) The method of claim 14 wherein the collected ~~proportional~~ backend server capability data is encoded to indicate each of the plurality of backend servers in accordance with their proportional capability based at least in part on the collected backend server capability data.

21. (Currently Amended) The method of claim 14 wherein the collected backend server capability data includes one or more of: ~~proportion~~ a percentage of sample requests serviced by each of the backend servers, time for each of the backend servers to serve each sample request, time for each of the backend servers to serve total sample requests, proportion of sample request types serviced by each of the backend servers, and time for each of the backend servers to serve sample request types.

26. (Currently Amended) A method comprising:

maintaining a ~~proportional~~ server capability information encoding stored in at least one of a persistent or non-persistent memory in a computer, wherein the maintaining includes at least periodically updating the ~~proportional~~ server capability information stored in at least one of the persistent or non-persistent memory, and, wherein the encoding is one of either a linked list, a binary search tree, a hash table or

an array, and wherein a proportion of entries, for each server, in the linked list, binary search tree, hash table or array correspond to the proportional server capability of each server;

load balancing client requests across a plurality of servers in accordance with the ~~proportional~~ server capability information encoding that reflects ~~proportional~~ capabilities of each the plurality of servers in relation to the capabilities of all the servers collectively, such that each server's percentage of the collective capability is reflected in the encoding, wherein the reflected ~~proportional~~ server capability information is based at least in part on servicing of sample requests by the plurality of servers.

30. (Currently Amended) The method of claim 26 further comprising collecting the ~~proportional~~ server capability information at intervals between servicing of client requests.

31. (Currently Amended) The method of claim 26 wherein updating the ~~proportional~~ server capability information encoding comprises:

transmitting the sample requests to the plurality of servers at intervals; and recording the server capability information that indicates frequency of the sample requests serviced by the servers in the persistent or non-persistent memory.

33. (Currently Amended) The method of claim 26 wherein the encoding includes a data structure that proportionally represents the plurality of servers in accordance with the ~~proportional~~ server capability information.

37. (Currently Amended) A method comprising:

during a data collection interval,

transmitting sample requests to servers,

recording data that corresponds to servicing of the transmitted sample requests by each of the servers in at least one of a persistent or non-persistent memory in a recording computer; and encoding the recorded data, wherein the encoding of the data ~~proportionally~~ represents each of the servers in accordance with their ~~proportional~~ percentage of total server capability based at least in part on the recorded data, and

wherein the encoding is one of a linked list, a binary search tree, a hash table or an array, and wherein a proportion of entries, for each server, in the linked list, binary search tree, hash table or array correspond to the proportional server capability of each server.

38. (Currently Amended) The method of claim 37 wherein the encoding includes a load balancing table, and wherein a ~~proportion~~number of entries for each server in the load balancing table exist in accordance with the ~~proportional~~ server capability of each server.

53. (Currently Amended) A machine-readable storage medium storing one or more instructions executable by a computer processor, the instructions comprising:

a first sequence of instructions to transmit sample requests to a plurality of servers at intervals and receive responses corresponding thereto;

a second sequence of instructions to determine ~~proportional~~ capability information for each of the plurality of servers that reflects ~~proportional~~ capabilities of each of the plurality of servers as a percentage of total server capability, ~~the~~

~~proportional capability being a ratio to the total capability of all the servers,~~ based at least in part on the sample requests and corresponding responses; and

a third sequence of instructions to encode the determined ~~proportional~~ capability of each of the plurality of servers into a representative encoding, wherein the representative encoding represents each of the plurality of servers in accordance with each server's determined proportional capability, wherein the encoding is one of either a linked list, a binary search tree, a hash table or an array, and wherein a proportion of entries, for each server, in the linked list, binary search tree, hash table or array correspond to the proportional server capability of each server.

55. (Currently Amended) The machine readable storage medium of claim 53, wherein the third sequence of instructions further includes instructions to maintain the ~~proportional~~ server capability encoding for load balancing.

56. (Currently Amended) The machine readable storage medium of claim 53, further comprising a fourth sequence of instructions to load balance client requests in accordance with the ~~proportional~~ server capability encoding.

57. (Currently Amended) The machine readable storage medium of claim 56, further comprising a fifth sequence of instructions to buffer client requests during the intervals.

60. (Currently Amended) A machine-readable storage medium, storing a computer program product comprising:

a first sequence of instructions to update a ~~proportional~~ server capability load balancing information encoding including indications for each server that reflect ~~proportional~~ measured sample request based capabilities of a plurality of servers, the

reflection represented by relative occurrence of the indications for each server and indicative of a percentage of total server capability reflected by each server, wherein the encoding is one of either a linked list, a binary search tree, a hash table or an array, and wherein a proportion of entries, for each server, in the linked list, binary search tree, hash table or array correspond to the proportional server capability of each server,

wherein the proportional measured sample request based capabilities are measured during intervals; and

a second sequence of instructions to select server indications from the proportional server capability load balancing information encoding to load balance client requests.

61. (Currently Amended) The machine readable storage medium of claim 60, wherein the computer program product further comprises a third sequence of instructions to buffer client requests while the first sequence of instructions updates the ~~proportional~~ server capability load balancing information encoding.

62. (Currently Amended) The machine readable storage medium of claim 60, wherein the computer program product further comprises a third sequence of instructions to forward client requests to standby servers while the first sequence of instructions updates the ~~proportional~~ server capability load balancing information encoding.

65. (Currently Amended) The machine readable storage medium of claim 60 wherein the measured sample request based ~~proportional~~ capabilities include one or more of number of sample directory requests serviced during a time interval, number of

sample directory requests serviced during a time interval based on type of sample requests, time to service a number of sample directory requests during a time interval, and time to service a number of sample directory requests based on type of sample requests during a time interval.

67. (Currently Amended) A network comprising:

a plurality of servers processing requests; and

a computer readable storage media containing one or more routines executable by a computer processor, the routines including one or more load balancing routines forwarding client requests in accordance with a ~~proportional~~ server capability information encoding that ~~proportionally~~ indicates each of the plurality of servers in accordance with their ~~proportional~~ processing capability as a percentage of total capability, wherein the ~~proportional~~ server capability information encoding is based at least in part on servicing of sample requests during intervals between forwarding of client requests, wherein the encoding is one of either a linked list, a binary search tree, a hash table or an array, and wherein a proportion of entries, for each server, in the linked list, binary search tree, hash table or array correspond to the proportional server capability of each server.

71. (Currently Amended) A computer readable storage medium storing one or more routines executable by a computer processor, the execution of the one or more routines causing the computer processor to perform at least:

collecting ~~proportional~~ server capability information for a plurality of servers, wherein the server capability information is based at least in part on processing of sample requests transmitted to the plurality of servers;

encoding the ~~proportional~~ server capability information in a weighted distribution, such that portions of the weighted distribution corresponding to each server occupy a portion of the weighted distribution substantially equivalent to the ~~proportional server~~ processing capability of each of the servers as a percentage of the total capability, wherein the weighted distribution is further encoded as one of either a linked list, a binary search tree, a hash table or an array, and wherein a proportion of entries, for each server, in the linked list, binary search tree, hash table or array correspond to the ~~proportional~~ server capability of each server as a percentage of total server capability; and

selecting, from the weighted distribution, a server to process a client request.

72. (Currently Amended) The computer readable storage medium of claim 71, wherein the ~~proportional~~ server capability information is, representative of the server capability of each server in comparison to the server capability of all the servers.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

The prior art of record fails to teach neither singly nor in combination, the claimed limitations of "load balancing routines encode the collected proportional server capability information in a weighted distribution that represents the plurality of servers in a

weighted manner based at least in part on the proportional server capability information, the weighted manner reflecting a percentage of total server capability realized by each server, wherein the encoded load balancing is stored in a persistent or non-persistent memory of the collection computer, wherein the encoding is one of either a linked list, a binary search tree, a hash table or an array, and wherein a proportion of entries, for each server, in the linked list, binary search tree, hash table or array correspond to the proportional server capability of each server" as stated in claim 1, and similarly stated in claims 14, 26, 37, 53, 60, 67, and 71. These limitations, in conjunction with other limitations in the independent claim, are not specifically disclosed or remotely suggested in the prior art of record. A review of claims 1, 3, 7-18, 21-28, 30-47, 53, and 55-75 indicated claims 1, 3, 7-18, 21-28, 30-47, 53, and 55-75 are allowable over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Gillis whose telephone number is (571)272-7952. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing F. Chan can be reached on 571-272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Brian J Gillis
Examiner
Art Unit 2441

/B. J. G./
Examiner, Art Unit 2441
11/3/2009

/Larry Donaghue/
Primary Examiner, Art Unit 2454